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ENTOMOLOGICAL NEWS

Vol. XLIII No. 2

JOHN HENRY COMSTOCK, 1849-1931.
Portrait of 1884.

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LARVAE OF CHRYSOMYZA DEMANDATA IN CORN SILAGE
—DRAKE AND DECKER.

ENTOMOLOGICAL NEWS

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A Scavenger Fly, Chrysomyza demandata Fabr., Breeding in Corn Silage (Dipt.: Ortalidae).*

By C. J. DRAKE and G. C. DECKER, Ames, Iowa.

Plate I.

A European scavenger fly *Chrysomyza demandata* Fabr.,** first recorded in the United States in 1900, was found in large numbers breeding in silage during the month of April, 1931, near Valley Junction, Iowa. According to published records this species is a scavenger of very general breeding habits in decaying plant materials. It has been reared from manure, decaying fruits and vegetables, insect excrement and from situations where decaying and fermenting organic matter was available. In Europe the maggots have been found in fermenting clover which had been subjected to a crude process of ensilage. This seems to be the only record of its breeding in silage or other stock feeds.

On April 6, 1931, Mr. Hoyt Elbert, a farmer and stock-feeder living two and one-half miles southwest of Valley Junction, Iowa, observed a large number of living maggots in his silage as it was being transferred from the silo to the feeding bunks for his cattle. At first he was under the impression that the maggots were generally distributed throughout the silo, but a closer examination revealed that they were restricted largely to small pockets of decaying silage.

The silo in question was of wooden interlocking stave construction, 16 x 36 feet, and in fairly good condition. It had been filled on September 2 and 3, 1930, with corn which had been injured by the drought and, as a result, was a little too dry to make the best grade of corn silage. In addition, the surface was not tramped thoroughly and no water had been added during the siloing process. As a result there were numerous pock-

* Journal Paper No. B8 of the Iowa Agricultural Experiment Station.
** Determined by Dr. J. M. Aldrich, U. S. N. M., Washington, D. C.

ets of loose dry fodder which did not undergo the normal heating and fermenting process which is essential to the preservation of the silage. In these small pockets of decaying and rotten silage the maggots occurred in great numbers.

When first observed the maggots were nearly full grown and the silage was about 10 or 12 feet above the concrete foundation. As the farmer was feeding over 100 steers a horizontal layer of from 4 to 6 inches of silage was removed daily, the top surface being kept level so as to expose as little as possible of the silage to the air. These small pockets, each containing about one cubic foot of decaying and rotten silage, occurred in different layers here and there throughout the silo. From the time the maggots were first noted, April 6, until the silo was empty, April 30, the maggots were found each day in these pockets in large numbers. It was impossible to determine when the eggs had been deposited or how long the maggots had remained in the larval stage. Samples of infested silage were placed in tight tin cans and transported to the Insectary at Ames. The material was then divided into two lots, one lot being placed in tight tin cans containing about two inches of moist sand, and the other in a similar container without any sand. In the former cages a considerable number of the maggots immediately entered the sand for pupation, whereas the maggots in the container without sand remained quite active and only now and then one transformed into the resting stage. After a few days a little moist sand was added to the second lot of containers and the maggots immediately entered the sand for pupation. From these observations it seems quite evident that the larvae had remained active for several days after reaching maturity because of the unfavorable conditions for pupation.

The farmer and the county agent both considered the silage of a fairly good grade. In removing the silage from the silo no attempt was made to discard the rotten maggoty silage, it being mixed with the good silage as it was loaded on the wagon and placed in the feeding bunks. The cattle relished the silage and did very well on it, consuming thousands of maggots during the month of April without any apparent injury or ill effects.

PLATE I. Larvae of *Chrysomyza demandata* Fabr. in corn silage.

A New Hawaiian Species of Labia (Dermaptera : Forficulidae, Labiinae).

By MORGAN HEBARD.

Specimens of an earwig related to *Labia dubronyi* Hebard [1] have been submitted to us by Mr. O. H. Swezey.

Though we realize that decided individual variation occurs in many species of earwigs, these individuals differ from those of *dubronyi* in the features given below, and as no convergence is shown by any specimen of either series, we believe that a distinct species and not a race or mere variation is indicated. This species we take pleasure in naming *Labia swezeyi.*

It averages larger and is distinctly more robust than *dubronyi,* the pronotum broader in proportion to the width across the tegmina and the male forceps are toothed just beyond a median point, instead of having a ventro-internal flange which, gradually widening, terminates in a tooth at the end of the proximal three-fifths.

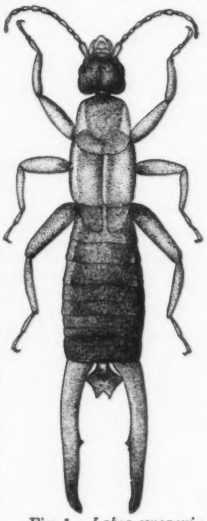

Fig. 1. *Labia swezeyi* n. sp., ♀ allotype X 6.

Labia swezeyi new species. Figure 1.

Type: ♂ ; Mount Kaala, Oahu, Hawaiian Islands. Elevation 2000 feet. November 11, 1926. (O. H. Swezey; from beneath bark of tree.) [Hebard Collection, Type No. 1205.]

Size medium small, form medium. Head as in *dubronyi;* hirsute, angularly cordiform, the medio-longitudinal suture weakly indicated in occipital portion. Eye small, slightly over half length of cheek. Antennae as in *dubronyi;* with thirteen joints; first large, narrow in proximal third, with parallel sides in distal two-thirds, as long as third and fourth combined; second very small; distal joints elongate spindle-shaped. Pronotum appreciably broader than in *dubronyi* but otherwise similar, very minutely impresso-punctulate and hirsute. Tegmina and wings as in that species; hirsute, the former with apices transversely truncate. Abdomen similar but broader, glands subobsolete, dorsal surface shining and supplied with

[1] Described in Occas. Papers B. P. Bishop Mus., VII, p. 318, pl. XXVI, figs. 5 to 7, (1922).

even finer hairs but ultimate tergite with large smooth areas. Pygidium as in *dubronyi;* strongly declivent, then flattened in a large horizontal plate which is triangularly produced mesolaterad and with apex formed by two smaller triangular productions (thus resembling a four-pointed star). Forceps moderately elongate, hirsute, almost straight but with inner margins concave-convergent proximad and apices moderately incurved, armed slightly beyond the middle on the internal margin with a single small but stout tooth, situated mesad (vertically) and not ventrad as is the apical tooth of the flange in *dubronyi.* Caudal metatarsus similarly with length slightly greater than combined length of succeeding joints and with a row of hairs ventro-internally arranged in a series of lamellae.

Allotype: ♀ ; same data as type. [Hebard Collection.]

Differs from male as follows, agreeing with this sex of *dubronyi* except in averaging larger and more robust and in showing a minor pygidial difference. The node we described for that species, situated meso-distad on the ultimate tergite, could well be termed a small tooth. The pygidium in both species is also slightly narrower than an arm of the forceps at its base; convex-declivent to a very narrowly transverse distal horizontal flange, the disto-lateral angles of this flange sharp in *swezeyi* and its apex slightly broader than in *dubronyi* as in this species the straight lateral margins are appreciably divergent caudad which is not the case in *dubronyi.* Forceps well separated, showing weak curvature as in the male, dorsal and ventral internal margins coarsely and irregularly denticulate and feebly concave in proximal three-fifths, thence unarmed and showing slightly greater concavity to the apex with ventral margin developed into a very feeble flange.

Head, disk of pronotum (in intensive examples), exposed portions of wings and bases of median and caudal femora deep chestnut-brown. Abdomen, base of pygidium in male and all of it in female and apices of forceps russet, horizontal portion of pygidium in male and other portions of forceps in both sexes ochraceous tawny. All but disk of pronotum (in intensive examples), tegmina and limbs (except bases of median and caudal femora) buckthorn brown. Antennae dark prouts brown, becoming paler proximad.

Length of body ♂ 7.4, ♀ 7.8[2]; length of pronotum ♂ 1.24, ♀ 1.27; width of pronotum ♂ 1.21, ♀ 1.22; length of tegmen ♂ 1.75, ♀ 1.77; exposed length of wing ♂ .43, ♀ .57; length of forceps ♂ 3.8, ♀ 3 mm.

A male and two females bear the same data and are paratypes.

[2] The body length of the paratypic female of *Labia dubronyi* from Opeaeula, Oahu, is 7.7 mm., as originally given but the abdomen is greatly pressed out; this dimension in life was probably not over 7 mm.

Description of a New Race of Eurema gundlachia Poey from Ecuador (Lepid.: Pieridae).

By W. Judson Coxey.

Eurema gundlachia race **morleyi** new race.

This race differs from the typical *gundlachia* from Southern United States, Mexico and Cuba in that the head and scapula have a strong admixture of black. The veins of the wing especially at the base are more or less defined by black scales.

♀ paler than the male with basal portion of the wings strongly suffused with black, however leaving the basal costal area wholly yellowish orange.

This race is readily distinguished from *Eurema proterpia watsoni* Klots, also described from Ecuador, by having the tails of the secondaries more acutely produced in both sexes.

Type—Male; Huigra, 4000 feet elevation, Ecuador, December, 1928. *Allotype*—Female; collected with type. *Paratypes*—1 ♀, collected with type; 2 ♀ Naranjapata, 1850 feet elevation, Ecuador, November, 1926. Collected by W. Judson Coxey and named for Edward Morley of Huigra, Ecuador, whose hospitality and assistance to the writer are greatly appreciated.

Types in the collection of the Academy of Natural Sciences of Philadelphia.

Biological Notes and New Records of North American Chermidae (Homoptera).

By F. D. Klyver, San Mateo Junior College, San Mateo, California.

(Continued from page 12.)

Kuwayama lavaterae Van Duzee. California.—Adults and nymphs: from *Lavatera assurgentiflora*, Roosevelt High School, Daly City, May 4, 1929; from same host, North Grant Avenue, San Mateo, May 5, 1929; same data, July 2, 1929; from same host, Olympic Golf Course, San Francisco, July 6, 1929; from same host, King City, December 8, 1929; from same host, Spreckels, same date; from same host, Belmont, San Mateo County, November 15, 1930; from "Malva", San Francisco, Novembr 1, 1930 (J. B. Steinweden).
Host: *Lavatera.*

This species becomes exceedingly abundant and apparently is sometimes the primary cause of death of its host. Adults, nymphs of all stages, and numerous eggs are to be found simultaneously on the ventral side of the leaves and on the younger growth including the buds and flowers. In moderate infestation the nymphs occur is blister-like depressions. In more severe cases there may be as many as three hundred or more nymphs on a single leaf. The fact that successive generations over-lap in time in this species suggests that something has disturbed its synchronization. Possibly the influence of climate is responsible, since this species was supposedly introduced with its host from the islands off the coast of southern California.

LEURONOTA MACULATA Crawford. NEW MEXICO.—Adults only: from *Lepidium alyssosides,* 1 mile east of Mesquite, May 6, 1931 (Romney); same data, June 4, 1931.
Host: Unknown. Nominal Hosts: *Lepidium, Condalia obovata, Columbrina texana.*

PARATRIOZA COCKERELLI Sulc. ARIZONA.—Adults only: from *Salsola pestifer,* 2 miles south of Springerville, August 4, 1929 (Romney); same data, 13 miles east of Springerville. CALIFORNIA.—Adults and nymphs: from *Solanum umbelliferum,* Stanford University, April 24, 1929 (Duncan); from same host, Hillsborough, May 12, 1929. Nymphs only: from same host, Tesla, southeast of Livermore, May 11, 1929; from same host, Clark's Canyon, San Mateo, May 20, 1929; from *Convolvulus,* Stanford University, October 17, 1922 (Ferris); from pepper leaves, Santa Ana, August 31, 1930 (Keifer). Adults only: from *S. umbelliferum.* San Mateo, June 15, 1929; from *Pinus monophylla,* Marangue Peak, Argus Mountains, April 12, 1929; from *Chrysothamnus,* Rock Creek, north of Bishop, June 19, 1931; from *Atriplex,* 3 miles south of Lone Pine, June 19, 1931. NEW MEXICO.—Adults only: from *Salsola pestifer,* 3.5 miles west of Datil, August 6, 1929 (Romney); from same host, .5 mile south of Alma, August 3, 1929 (Romney); from *Senecio filifolius,* 21.5 miles north of Lordsburg, August 10, 1929 (Romney); from unknown host, Mesilla Valley, June 9, 1929 (Romney). UTAH.—Adults only: from beets, Delta, July 27, 1927 (Knowlton); from tomatoes, Hooper, October 14, 1927 (Pack: Knowlton); same data, from willow, same date; from unknown host, June 13, 1930 (Knowlton: Melvin Jones).

Hosts: *Solanum umbelliferum, S. nigrum, S. tuberosum, Capsicum annuum, Convolvulus.* Nominal Hosts: Alfalfa, arborvitae, spruce, tobacco, petunia, pine, beets, willow, *Datura, Iochroma, Covillea, Erigonum, Sophia, Norta, Chrysothamnus, Lepidium, Hymenoclea, Salsola.*

The nymphs of this species are found on the ventral side of the leaves, on the caylx, and the fruit, the eggs being most common on the younger growth as far as available records show. The nymphs are oval in outline, and closely appressed to the leaf in shallow depressions. The younger nymphs are orange in color, the older nymphs have pale green bodies with the wing pads orange, and the eggs are yellow. This species is evidently of considerable, but imperfectly known, economic importance. There is evidence that it may be of some importance as a carrier of pathogenic organisms infesting economic plants.

PARATRIOZA MACULIPENNIS Crawford. CALIFORNIA.—Adults only: from *Atriplex,* north of Tracy, October 12, 1929 (Annand); from *Lycium,* Darwin Wash, near Marangue Peak, Argus Mountains, April 12, 1930; from grass, Carmichael, Sacramento County, June 25, 1931 (Keifer).
Host: Unknown. Nominal Hosts: *Atriplex, Lycium, Convolvulus occidentalis, Salix, Convolvulus arvensis, Ceanothus cordulatus,* grass.

TRIOZA BAKERI Crawford. CALIFORNIA. — Adults only: from *Arctostaphylos,* 17.2 miles west of Coalinga, December 8, 1929; from pear trees, Kelseyville, April 8, 1931 (Keifer).
Host: Unknown. Nominal Hosts: *Pinus ponderosa, Abies, Arctostaphylos,* spruce, pear.

TRIOZA BREVIANTENNATA Crawford. CALIFORNIA.—Adult only: from *Atriplex,* north of Tracy, October 12, 1929 (Annand).
Host: Unknown. Nominal Host: *Atriplex.*

TRIOZA COLLARIS Crawford. CALIFORNIA.—Adults only: from *Baccharis viminea,* Corral Hollow, 10 miles southwest of Tracy, November 4, 1929 (Annand); same data, November (Annand and Klyver); from same host, 5 miles west of Coalinga, (adults mating), December 8, 1929; from same host, Keene, Tehachapi Creek, Kern County, April 13, 1930; from *B. pilularis,* sand dunes, San Francisco, April 3, 1931; from *Salix,* 4.7 miles southeast of Byron on Vasco Road, November 30, 1929; from *Ephedra,* Marangue Peak, Argus Mountains, April 12, 1930. NEW MEXICO.—Adults only: from *Lepidium alyssoides,* 1 mile east of Mesquite, May 26, 1931 (Romney).

Host: (*Baccharis?*) Nominal Hosts: *Baccharis, Salix, Ephedra, Lepidium.*

The skins of a number of last stage nymphs were taken from *Baccharis pilularis* on the sand dunes, San Francisco. While this is not positive proof that these are the skins of *T. collaris* nymphs, it is regarded as very strong circumstantial evidence to this effect, especially in view of the frequency with which this chermid has been taken from *Baccharis.*

The nymphal skins were unaccompanied by conspicuous wax secretion.

TRIOZA ALBIFRONS Crawford. CALIFORNIA. — Adults and nymphs; from *Urtica gracilis* var. *holosericea,* San Mateo Creek, San Mateo, October 25, 1929; from same host, Mallard Lake, Golden Gate Park, San Francisco, November 1, 1929; from same host, south of Tehachapi, Kern County, April 13, 1930; from same host, San Remo, south of Carmel, March 30, 1931; from same host, Smith Creek, Mount Hamilton Road, Santa Clara County, April 18, 1931. Nymph only: taken by sweeping weeds, 3 miles west of Corral Hollow, southwest of Tracy, November 30, 1929. Adults only: from *Urtica,* Three Rivers, Tulare County, April 18, 1930. NEW MEXICO.—Adults only: from *Amaranthus retroflexus,* Brazos, July 18, 1929 (Romney); same data, Chama, same date.
Host: *Urtica.* Nominal Hosts: *Amaranthus,* weeds.

The nymphs occur without waxy secretion on the ventral side of the leaves and on the younger growth. This species is especially interesting because of its close relationship to *T. urticae* (L.), the European species infesting nettle.

TRIOZA FRONTALIS Crawford. NEVADA.—Adults and nymphs: from *Amelanchier alnifolia,* Zephyr Point, Lake Tahoe, July 16, 1929.
Host: *Amelanchier.*

The nymphs are found on the ventral side of the leaves, unaccompanied by wax. They are not known to occur in abundance.

TRIOZA OBTUSA Patch. NOVA SCOTIA.—Adults only: from *Pinus,* Smith's Cove, no date (W. H. Brittain).
Host: *Amelanchier canadensis.* Nominal Host: *Pinus.*

The nymphs are found on the ventral side of the leaves. Un-

like the closely related western species, *T. frontalis,* they produce an abundance of white, floss-like wax.

TRIOZA MAURA Forster. CALIFORNIA.—Adults and nymphs: from *Salix lasiandra,* Santa Rosa, July 24, 1922 (Duncan); from *Salix,* Rock Creek, northwest of Bishop, June 19, 1931; from same host, Salinis River bridge, King City, December 8, 1929; from same host, south of Tehachapi, Kern County, April 13, 1930; from same host, Crystal Springs Lake, San Mateo County, May 1, 1930. Nymphs only: from same host, south end of Lake Tahoe, July 15, 1929. Adults only: from *Baccharis viminea,* Corral Hollow, 10 miles southwest of Tracy, November 4, 1929 (Annand); from pear trees, Andrus Island, Sacramento County, April, 1931 (Keifer); from same host, Hood, April 16, 1931 (Keifer); from *Salix,* Corral Hollow, November 4, 1929 (Annand); from *Carex* and weeds, 3 miles west of Corral Hollow, November 30, 1929; from *S. lasiandra,* lower Kern River Canyon, west of Bodfish, June 19, 1931; from *Salix,* 4.7 miles southwest of Byron on Vasco Road, November 30, 1929; from same host, Mountain Springs Canyon, Coso Mountains, April 12, 1930; from same host, near Shepherds Canyon, Argus Mountains, same date; from same host, Savory's Tule Pond, south of Fresno, April 15, 1930; from same host, Old Fort Miller, Fresno County, April 16, 1930. NEW MEXICO.—Adults only: from *Salsola pestifer,* 5 miles north of Salt Lake, June 5, 1929 (Romney).
Hosts: *Salix* spp. Nominal Hosts: *Baccharis, Salsola.*

The nymphs resemble a scale insect. They are oval in outline and occur very closely appressed to the ventral side of the leaves, forming shallow, blister-like depressions. They do not produce any conspicuous waxy secretion. Rarely have the nymphs been found in great abundance.

TRIOZA SALICIS Mally. IDAHO.—Adults only: from grass and shrubs, head of Salmon River, July 19, 1930 (Annand).
Host: Unknown. Nominal Hosts: *Salix* spp., grass, shrubs.

TRIOZA ALACRIS Flor. CALIFORNIA.—Adults and nymphs: from bay tree, Ontario, August 10, 1914 (Clausen: J. C. Chamberlin); from bay, Domoto Nursery, Oakland, no date (Ferris); from *Laurus nobilis,* Pasadena, January 24, 1929 (Keifer: E. L. Smith). Adults and eggs; from same host, nursery Ellsworth and Poplar avenues, San Mateo, May 17, 1929. Nymphs only: from same plants, June 17, 1929.
Host: *Laurus nobilis.*

The nymphs cause the leaves to curl ventrally and longitudinally, thicken, redden, and finally to drop. In severe infestation the hosts may be seriously defoliated.

NEOTRIOZELLA LATICEPS Crawford. NEW MEXICO.—Adults only: from unknown host, no data (Romney).
Host: Unknown.

PACHYPSYLLA VENUSTA Osten Sacken. MISSISSIPPI.—Adults and nymphs: from *Celtis occidentalis,* A. & M. College, January 26, 1931 (Myers).
Host: *Celtis occidentalis.*

This species forms numerous woody, polythalamous galls on the smaller branches and petioles of hackberry.

PACHYPSYLLA C.-MAMMA Riley. UTAH.—Adults only: from *Celtis,* Hooper, May 29, 1928 (Pack: Knowlton). Host: *Celtis* sp.

PACHYPSYLLA DUBIA Patch. UTAH.—Adults only: from *Celtis,* Hooper, May 29, 1928 (Pack: Knowlton). Host: *Celtis* sp.
EUPHYLLURA ARCTOSTAPHYLI Schwarz. CALIFORNIA.—Adults and nymphs: from *Arctostaphylos,* Tesla, Alameda County, May 11, 1929; from same host, Pine Ridge, east of Auberry, Fresno County, August 3, 1929; from same host, Pinnacles National Monument, April 1 and 2, 1931 (Hedgpeth and Smith); from same host, General Grant National Park, July 12, 1930. Nymphs only: from same host, near Deer Creek Inn, Placerville, July 15, 1929; from *A. manzanita,* Julian, August, 1916 (J. C. Chamberlin); from *Arctostaphylos,* Mount Hamilton, October 7, 1922 (Ferris); from same host, Stanford University, June 2, 1923 (Ferris); from same host, Clark's Canyon, San Mateo, March 10, 1930 (Hedgpeth). Adults only: from same host, 17.2 miles west of Coalinga, December 8, 1929. NEVADA.—Adults only: from same host, Zephyr Point, Lake Tahoe, September 1, 1930 (Keifer).
Host: *Arctostaphylos* spp.

The nymphs produce an abundance of white flaky or cottony wax and usually are found in individual cells constructed of this material. They are most prevalent on the ventral side of the leaves, but in severe infestations are found on both sides, as well as on the younger growth including the branches and buds. The leaves may be literally covered with wax cells.

EUPHYLLURA NEVEIPENNIS (Schwarz). CALIFORNIA.—Adults only: from *Arctostaphylos,* west of Placerville, July 15, 1929;

from same host, near Deer Creek Inn, Placerville, same date; from same host, Westpoint, Amador County, August 31, 1930 (Hedgpeth).
Host: Unknown. (Probably *Arctostaphylos* spp.) Nominal Hosts: *Arctostaphylos* spp.

EUPHYLLURA ARBUTI Schwarz. CALIFORNIA.—Adults and nymphs: from *Arbutus menziezii,* Crystal Springs Road, San Mateo, April 10, 1929.
Host: *Arbutus menziezii.* Nominal Host: Honeysuckle.

The nymphs occur under the bark scales in cells constructed of their white cottony wax secretion, which frequently becomes heavily infested with jet black "sooty mold". In severe infestations the nymphs are also found on the leaves and younger growth.

EUPHYLLERUS VERMICULOSUS Crawford. CALIFORNIA.—Adults only: from *Ceanothus,* Green Valley, El Dorado County, May 30, 1931 (Keifer). UTAH.—Adults only: from unknown host, Logan Canyon, August 21, 1925 (Knowlton); from sage, Spring Canyon, altitude 6800 feet, August 28, 1925 (Knowlton).
Host: Unknown. Nominal Host: *Ceanothus.*

ARYTAINA ROBUSTA Crawford. CALIFORNIA.—Adults and nymphs: from *Ceanothus,* Black Mountain Road, Hillsborough, May 12, 1929. UTAH.—Adults only: from unknown host, Logan Canyon, Logan, July 24, 1930 (Annand).
Host: *Ceanothus.*

The nymphs occur on the ventral side of the leaves in individual cells constructed of white wax secretion, in which all the nymphal stages occur. The last stage nymph leaves its cell a short time before the last molt.

ARYTAINA FUSCIPENNIS Crawford. CALIFORNIA.—Adults and nymphs: from *Ceanothus papillosus,* Cone Peak, Santa Lucia Mountains, April 15, 1923 (Ferris). Nymphs only: from same host, Sierra Morena, October 15, 1922 (Ferris).
Host: *Ceanothus papillosus.* Nominal Hosts: .*Ceanothus* spp.
Biological data lacking.

ARYTAINA RIBESIAE Crawford. CALIFORNIA.—Adults and nymphs: from *Ceanothus thyrsiflorus,* San Francisquito Creek, north of Felt Lake, Stanford University, June 20, 1929. Nymphs only: from same host, May 3, 1929. UTAH.—Adults only: from wild current, Hooper, October 14, 1927 (Pack:

Knowlton); from unknown host, Logan Canyon, Logan, July 24, 1930 (Annand).
Host: *Ceanothus thyrsiflorus*. Nominal Hosts: Wild currant, *Ribes aureum, Rhus trilobata, Ceanothus* spp.

The nymphs are found in great abundance in white, wax cells on the ventral side of the leaves, and in severe infestations on the petioles and branches. By actual count, as many as fifty-six nymphs have been taken from individual cells on a single leaf.

(To be continued).

Notes on Some Stag-Beetles (Coleop.: Lucanidae).

By Bernard Benesh, North Chicago, Illinois.

In plotting the distribution of the Boreal American Lucanids, I had the pleasure of examining the principal collections in the United States, recording as far as possible the localities, date of capture, etc., for a list to be published in the near future.

Some time ago, in the material sent to me for examination, through the courtesy of Mr. Paul H. Johnson, College of Agriculture, University of Missouri, a very interesting form has come under my notice.

The specimen that I am now describing was collected by some unknown student, who unfortunately forgot to record the locality, but Mr. Johnson assured me that the specimen in question is from the neighborhood of Columbia, Missouri.

Pseudolucanus placidus (Say).

♂ Mandibles elongate, 4 m/m long, porrect, curved slightly from the center towards the apex, terminating in an acute point. On the inner edge, one-third from the apex, armed with a single bifid tooth. Length, mandibles inclusive, 27 mm.

Differs radically from the typical form of *P. placidus* (Say), only in the mandibular dentition. Mandibles are not so robust, as in the typical form, are more elongate, showing no indication of the other teeth, as in the regular dentition of *P. placidus*. A male in my collection, number 1042.

An additional shipment of specimens from the same locality arrived in such condition that only the heads of the specimens

were saved. In this shipment two more examples of the above described variant were found, and the heads placed in my collections, numbers 1702-1703.

Not confining myself to the study of Lucanidae, North of Mexico, as have most of our students, I have by correspondence with South American entomologists gotten all the available data on their Lucanid fauna.

In a letter from Mr. Juan Tremoleras, of Montevideo, Uruguay, I was informed that he had a specimen of a Lucanid that he could not determine. Upon my request, he very kindly sent the specimen to me, which proved to be *Metadorcus rotundatus* (Parry).*

This extends the habitat of this species from Brazil to Uruguay. Mr. Tremoleras informs me that the specimen was presented to him by Mr. F. O. Lucas, who collected it in the Province Cerro Cañada de los Burros, in 1908, and that it is unique in his collection, since that date. From this I judge that the insect must be rather rare in that locality, probably showing the extreme southern limit of its distribution. Parry originally described the species from Brazil (?), (Proc. Ent. Soc. London, 1862, p. 112) and figured it in the Transactions of the Ent. Soc. London, 1864, pl. 7, fig. 8. Inasmuch as the figure given by Parry does not fully agree with this fine beetle, a photograph of the insect was made for record.

Dr. Didier (in Études sur les Coléoptères Lucanides du Globe, fascicule 2, III, Notes synonymiques, p. 53) places *Neolucanus lemeei* Houlbert, as a synonym of *N. robustus* Boileau. In the reference given (Insecta 1914, p. 276), an error was noted. It should be Insecta 1914, p. 260.

Attention is called to the omission of *Mitophyllus curvidens* Broun (Ann. Mag. Nat. Hist. 1904, vol. 14, p. 50) by G. van Roon (in Junk's Catalogus Coleopterorum, 1910, Pars. 8, Lucanidae). Although this species has been described for many years, no mention was made of it even in the previous van Roon's "Naamlijst der Lucaniden, welke tot heden beschreven zijn" (Tijdschrift voor Entomologie, Deel XLVIII).

* The writer wishes to acknowledge gratefully the hearty co-operation of Mr. Paul Nagel, Hannover, Germany, who kindly determined the specimen, and has shown him many favors in his study of the Lucanidae.

Notes on Coleoptera.—No. 3.*

By J. N. KNULL, Pennsylvania Forest Research Institute.

The following are a number of miscellaneous rearing records and observations which have been made in the last few years. Since most of the rearing was done indoors, the dates of emergence are omitted unless the material was reared under natural conditions. Clark's Valley is located in the Blue Mountains north of Harrisburg. All of the records are from Pennsylvania unless otherwise stated.

LYCIDAE

EROS HUMERALIS Fab. Larvae of this insect were found hibernating in partly decayed pitch pine (*Pinus rigida* Miller) logs at Mont Alto.

CLERIDAE

CYMATODERA BICOLOR Say. Pupae of this insect were found at Dauphin, January 18, in pupal cells in dead yellow birch (*Betula lutea* Mich.) infested with *Trichodesma* larvae and adults. The Clerid larvae had been feeding on the Anobiidae.

LECONTELLA CANCELLATA Lec. An adult was reared by the writer from a larva collected in the nest of a bee under the loose bark of a log, March 27, at Mont Alto, by A. B. Champlain. The insect emerged July 1.

THANASIMUS TRIFASCIATUS Say. Since the previous notes on this insect were published,† the following observations were made in Clark's Valley. August 11, several unhardened adults, many pupae and three larvae were found in their pupal cells in the thick bark of a dead white pine (*Pinus strobus* Linn.). In December, mature adults were taken from their pupal cells, thereby proving that the species passes the winter as either adults, or larvae in their transformation cells.

PLOEOPTERUS THORACICUS Oliv. March 6, a larva of this species was found in Clark's Valley, in a small dead branch of witch hazel (*Hamamelis virginiana* Linn.) infested with bark beetles determined by Dr. M. W. Blackman as *Lymantor de-*

* For Nos. 1 and 2 see Can. Ent., Vol. 57, p. 112-115, 1925. ENT. NEWS, Vol. 41, p. 82-86, 101-102, 1930.

† ENT. NEWS, Vol. 41, p. 82, 1930.

cipiens Lec. Adults were reared from dead willow branches collected in the same locality and infested with *Micracis swainei* Black., *Anthaxia viridicornis* Say and *Pogonocherus parvulus* Lec.

HYDNOCERA UNIFASCIATA Say. Reared from dead branches of white oak (*Quercus alba* Linn.) collected in Clark's Valley and infested with *Agrilus defectus* Lec.

H.VERTICALIS Say. Adults were reared from river birch (*Betula nigra* Linn.) infested with *Agrilus betulae* Fisher collected in Clark's Valley.

CORYNETIDAE

CREGYA OCULATUS Say. Reared from dead branches of chestnut (*Castanea dentata* Marsh.) collected in Clark's Valley and infested with *Euderces picipes* Fab. and *Ecyrus dasycerus* Say.

ORTHOPLEURA DAMICORNIS Fab. Reared from dead chestnut (*Castanea dentata* Marsh.) collected in Clark's Valley and infested with *Euderces picipes* Fab. and *Ecyrus dasycerus* Say.

ELATERIDAE

ALAUS MYOPS Fab. A larva of this species was found in a partly decayed pine log at Promised Land Lake, Pike County, feeding on adult carpenter ants (*Camponotus herculeanus pennsylvanicus* De G.), which were working in the same stick of wood.

LEPTOSCHEMA DISCALCEATUM Say. An adult was found in its pupal cell in a decayed pitch pine (*Pinus rigida* Miller) snag at Cold Springs, Adams County, July 26.

LUDIUS SULCICOLLIS *Say*. An adult was found in its pupal cell in a decayed pitch pine (*Pinus rigida* Miller) snag at Cold Springs, Adams County, August 16.

L. ROTUNDICOLLIS Say. The adults of this insect seem to be rather rare, probably due to their habits. The larvae on the other hand are fairly abundant, and can be found in the burrows of *Encyclops coerulea* Say and *Microclytus gazellula* Hald. in the outer bark of numerous living deciduous trees. The larvae are predaceous on the larvae of the Cerambycids and work through the galleries of the longhorns.

ELATER LINTEUS Say. April 21, a living adult was found under the tight bark of a dead pitch pine (*Pinus rigida* Miller) at Mont Alto.

E. SELLATUS Dej. An adult was found August 16, in its pupal cell in a decayed pitch pine (*Pinus rigida* Miller) snag at Cold Springs, Adams County.

E. VITIOSUS Lec. Numerous adults were collected in their pupal cells in the decayed wood of dead beech (*Fagus grandifolia* Ehr.) trees at Sweden Valley, September 23.

E. VERTICINUS Beduv. During the winter months numerous specimens of this species with thoraces ranging from red to black in color, were found in their pupal cells under the loose bark of partly decayed pitch pine (*Pinus rigida* Miller) at Mont Alto.

E. SEMICINCTUS Rand. Adults of this species were found in their pupal cells in a decayed hemlock (*Tsuga canadensis* Linn.) stump at Cold Springs, Adams County, on August 30; also in a decayed sycamore (*Platanus occidentalis* Linn.) log at Caledonia, on March 27.

E. XANTHOMUS Germ. Many adults were found during the winter months in their pupal cells under the loose bark of partly decayed pitch pine (*Pinus rigida* Miller) logs on the Mont Alto State Forest, Franklin County. The larvae work through the partly decayed inner bark and make pupal cells between the loose bark and the wood where they transform to adults in the fall.

MELANOTUS COMMUNIS Gyll. Adults of this species are found through the winter months in their pupal cells under the loose bark of partly decayed pitch pine (*Pinus rigida* Miller) and white pine (*Pinus strobus* Linn.) logs at Mont Alto.

M. FISSILIS Say. Adults were found in their pupal cells in decayed pitch pine (*Pinus rigida* Miller) logs at Mont Alto, during the winter months.

MELASIDAE

MELASIS PECTINICORNIS Melsh. On January 16, many living adults were chopped from a dead standing black gum (*Nyssa sylvatica* Marhs.) at Dauphin. The tree was about three inches in diameter and contained larvae also.

FORNAX ORCHESIDES Newn. Pupae of this insect were found in cells in the moist decayed wood in a living beech (*Fagus grandifolia* Ehr.) at Laporte, on September 7.

BUPRESTIDAE

DICERCA DIVARICATA Say. Adults reared from the dead wood of white oak (*Quercus alba* Linn.) and striped maple (*Acer pennsylvanicum* Linn.) collected in Clark's Valley. Also reared from red oak (*Quercus rubra* Linn.) collected at Towanda.

POECILONOTA CYANIPES Say. The larvae of this beetle work in the sapwood of living poplars (*Populus granidentata* Mich. and *P. tremuloides* Mich.) throughout Pennsylvania. The eggs are laid around wounds or roughened areas on trees often four inches in diameter and the irregular burrows frequently extend up the stems five inches.

CINYRA GRACILIPES Melsh. Adults were reared from dead branches of post oak (*Quercus stellata* Wang.) collected in Clark's Valley.

BUPRESTIS LINEATA Fab. Adults reared June 7, from the thick bark of white pine (*Pinus strobus* Linn.) collected at Black Gap. None of the larvae had entered the wood but confined their burrows and pupal cells to the bark.

AGRILUS SUBCINCTUS Gory. This insect was found breeding in the small dead branches of green ash (*Fraxinus pennsylvanica* var. *lanceolata* Sarg.) at Pond Bank. The dead branches had been killed by the oyster shell scale and the adults were numerous on the foliage of the living trees.

MELANDRYIDAE

MELANDRYA STRIATA Say. Reared from the wood of dead sassafras (*Sassafras variifolium* Salisby.) collected in Clark's Valley.

(To be continued).

Honor to Dr. L. O. Howard Abroad.

Dr. L. O. HOWARD, whose present address is 12 Quai d'Orleans, Paris, France, has recently been elected to honorary membership in la Société Linnéenne de Bordeaux. JOE S. WADE.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., FEBRUARY, 1932.

Entomology at the Convocation Week Meetings, December 28, 1931, to January 2, 1932.

Our annual summary of the entomological items of the programs of the American Association for the Advancement of Science and associated societies, held at New Orleans, Louisiana, follows:

The numbers of papers bearing on insects, including those in symposia and non-duplicating demonstrations were:

Entomological Society of America	36
American Association of Economic Entomologists	104
American Society of Zoologists	10
Same, Genetics Section	22
Ecological Society of America	3
American Society of Parasitologists	9
American Nature Study Society	1
Total	185

These papers were distributed in subject as follows:

General Entomology	5	Taxonomy	4
Collecting Methods	2	General Economic Entomology	13
Cytology	3	Insecticides	24
Anatomy	7	Apiculture	13
Physiology	21	Insects Affecting Cereals, Forage and Field Crops	18
Ecology	14	Do. Truck Crops	2
Behavior	1	Do. Greenhouse Plants	1
Geographical Distribution	4	Do. Fruits and Fruit Trees	16
Ontogeny	7	Do. Forest and Shade Trees	2
Phylogeny	1	Insects Carrying Plant Disease Germs	1
Variation	4		
Genetics	21		
Parasites of Insects	5		
Insects, etc., Affecting Man and Other Animals	16		

ii

Acarina	1
Araneina	1
Orthoptera	17
Isoptera	2
Embiidina	1
Ephemerida	1
Homoptera	11
Heteroptera	3
Thysanoptera	1
Neuroptera	1
Coleoptera (excluding Japanese Beetle)	23
Japanese Beetle	2
Hymenoptera (excluding Honey Bee)	14
Honey Bee	15
Lepidoptera (excluding Codling Moth, Oriental Peach Moth and Corn Borers)	18
Codling Moth	6
Oriental Peach Moth	1
Corn Borer	1
Diptera (excluding *Drosophila*)	20
Drosophila	8
Siphonaptera	1

Many of these figures are duplications, both between sections i and ii and also within each section.

The total number of papers was 5 more than those listed for the Cleveland meeting in the preceding year, the Economic Entomologists and the Genetics Section showing marked increases. There were decidedly more papers this year on Genetics, Insects Affecting Man and Other Animals, General Economic Entomology, Insecticides, Apiculture, Orthoptera, Coleoptera and the Honey Bee. There was a noticeable falling off in the number of papers on Cytology, Physiology, Geographical Distribution and Corn Borers.

The Entomological Society of America met on December 29 and 30, under the presidency of Dr. J. W. Folsom, Prof. J. J. Davis, secretary. The symposium was on Blood-sucking and Non-blood-sucking Flies in relation to Human Welfare, the announced participants being F. C. Bishopp, H. H. Schwardt, E. H. Hinman, W. B. Herms and Dr. Ernest C. Faust. The annual public address, Waging War on Insect Enemies of Man and Animals, was given by F. C. Bishopp, illustrated by slides and moving pictures.

The American Association of Economic Entomologists, J. W. Houser, president, A. F. Burgess, secretary, met on December 29, 30 and 31, in sections. The Entomologists' Dinner was held on December 30, at 6 P. M.

The Weeks Collection of Butterflies (Lepid., Rhopalocera).

By the will of the late Mr. A. G. Weeks, of Marion, Massachusetts, his immense collection of butterflies of the world is given to the Museum of Comparative Zoology at Harvard University. With this is also bequeathed his entomological library and the sum of $100,000. This collection, long known as the finest butterfly collection in this country, was begun by Mr. Weeks when a young man by the purchaseof the butterflies of Otto Poling. Later Mr. Weeks employed collectors to gather butterflies in South America, and published two volumes, beautifully illustrated, describing the new species, "Illustrations of Diurnal Lepidoptera Unknown to Science." In recent years he has added a large amount of valuable material both from collectors and from dealers. The collection is contained in forty-five fine cabinets.—*Science,* Jan. 8, 1932.

An Additional Note on Andrena hitei and A. ribifloris (Hymenoptera: Andrenidae).

In the effort to increase our knowledge of *Andrena,* Messrs. Elven Nelson and Cecil Williams, at the University of Colorado, made some careful studies of the morphology. Mr. Nelson paid particular attention to the genitalia, Mr. Williams to the mouth parts. The work of these men cannot be fully utilized until further taxonomic studies have been made, but the following explanation appears necessary. Mr. Nelson has already published (Entomological News, 1930, p. 322) a discussion of the sexes of *Andrena hitei* Cockerell. Through careful comparison with the male of the related (European) *A. fulva* Schrank, he concluded that the true male of *A. hitei* is the insect which has been known as *A. ribifloris* Viereck and Cockerell. It is now proper for me to explain, that when I edited Viereck's work on Rocky Mountain *Andrena,* and described the various species, (Proc. U. S. National Museum, 48, pp. 1-58 1914), I suppressed a number of Viereck's names, believing them not to represent valid species. Subsequent studies have indicated that I should have suppressed a few more, or reduced them to varietal rank, but in the case of *A. ribifloris* I appear to have confused two or more distinct things. The females (none of them *A. hitei*) which I (pp. 40-41) ascribed to *A. ribifloris,* Viereck originally had under no less than three specific names. The males of this series were set forth as *A. ribifloris* (P. 32) and *A. hemileuca* Viereck, the latter having been referred by Viereck to a species based on females from Washington and Oregon. The type of *A. ribifloris* was a male with the cheeks not angled-tuberculate behind, whereas the supposed

male *A. hemileuca* had them very broad, shining, angled behind. I thought at the time that this might well be a matter of individual variation. Returning to the subject, I now discover that the male called *A. hemileuca* has the stipes of the genitalia with the expanded portion elongate, approximately parellel-sided in the middle, like a knife-blade. On the other hand *A. ribifloris* (using Nelson's specimen) has the stipes with a broad subtriangular expansion and a relatively long narrow neck. Thus they are certainly quite different species. If, as now appears, the *A. ribifloris* examined by Nelson is the true male of *A. hitei*, what about the females formerly ascribed to *A. ribifloris?* It is very likely that the supposed *A. hemileuca* is not actually the species described from the Northwest, and it is a candidate for association with the females described as *A. ribifloris*. If we need another specific name, it will be possible to resurrect one of those first proposed by Viereck, and suppressed by me. But I hope to return to the subject later, and deal with it more adequately.

T. D. A. COCKERELL, Boulder, Colorado.

European Excursions for Entomologists in 1932.

American Entomologists who attend the Fifth International Entomological Congress and the Centenary of the French Entomological Society, in Paris, July 16-23, 1932, will doubtless take advantage of the occasion to visit other parts of Europe.

A joint committee was appointed in December, 1930, by the Entomological Society of America and by the Association of Economic Entomologists to arrange for transportation. In addition to providing for those going directly to the Congress, the arrangements of the Committee include two co-operative excursions through Europe at very moderate costs. While intended primarily for entomologists and their families and friends, others, up to certain limits, will be welcome.

Agreements between north Atlantic steamship companies prevent any actual reduction of the rates for ocean transport, but those going in the groups will be given superior accommodations. Furthermore, the Committee will be glad to accord to any one, whether going as a member of one of the groups or independently, the privilege of sharing in very favorable arrangements that have been made covering transportation in Europe and which will amount to a substantial saving of expense. In order to secure such benefit, reservations for ocean transportation should be made through the committee.

The first group will sail from New York on the Leviathan

June 11, visiting (among other places) Copenhagen, the Gota Canal in Sweden, which will be partly traversed on midsummer night when all the village folk hold festival and dance all night in the open air, Stockholm, Upsala, the summer home of Linnaeus at Hammarby, and thence by rail northward to the Swedish National Park in Lappland where a stay of some days will be made on the arctic tundra at Abisko with views of the midnight sun. Those who wish will have time to continue by excursion steamer to the North Cape and back. Returning to the Continent, some days will be spent in Holland and Belgium before going to Paris for the Congress. After that event there will be a week's excursion in the Pyrenees, arranged by the French local committee of the Congress. Then Avignon will be visited, with an excursion to Orange and the home of Fabre at Serignan. Continuing to Grenoble, the party will traverse the Savoyan Alps by motor coach to Argentières at the foot of Mount Blanc, and after some days continue by motor coach to St. Jeanne de Maurienne, and thence into Italy, where Turin, Genoa, Pisa, Naples, Rome, Assisi, Perugia, Florence, Bologna, and Venice will each be visited. Continuing over the Brenner Pass, a short stay will be made on the Eibsee in the Bavarian Alps, with opportunity to ascend the Zugspitze, Germany's highest peak. Munich, and the three beautifully preserved medieval cities Dinkelsbühl, Rothenburg, and Nuremberg will be visited, Leipzig during the autumn fair, Dresden, the Spreewald, and Berlin. After a final few days in England the party will sail for home September 17 from Southampton. Expenses estimated at about $800.

The second group will sail from New York on the Olympic July 1, joining the first group in Holland and remaining with them until the Alps. Thereafter they will omit Italy, and make a somewhat swifter tour of Germany, with also a few days in England before sailing, August 27, on the luxurious new liner Manhattan. Expenses about $550.

Those wishing to go directly to the Congress at the last moment will sail on the Majestic July 8. Estimated expenses including twelve days in Paris about $325. Combinations of portions of the tours can also be arranged.

These are not conducted tours in the usual sense, but are organized for pecuniary benefit to the individuals comprising a group. The members will be free to follow their own inclinations at the stopping places, and in the larger cities in most cases may take their meals at restaurants of their own choosing. While many of the points to be visited have been selected be-

cause of their importance as entomological centers, all are full of interest from other points of view for the general traveller.

Estimates are based upon tourist class (former second class) at sea, second class railway, unpretentious but thoroughly comfortable and clean hotels, and inexpensive restaurants, with an allowance for side-trips, incidental and personal expenses. They have been kept as low as possible, consistent with comfort, in order to make the trips available for students of limited means, who may look upon them as part of their educational equipment.

Reservations should be made at the earliest date possible. For circulars and information address:

O. A. JOHANNSEN, Chairman, Joint Committee of the Entomological Society of America and Association of Economic Entomologists on Transportation to Europe. Roberts Hall, Ithaca, New York.

Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The **figures within brackets** [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of ENTOMOLOGICAL NEWS for 10c. The number of, or annual **volume**, and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as* **explained above.**

Papers published in the Entomological News are not listed.

GENERAL.—Aravena, R. O.—Los insectos de la región Sud-Oeste de la Provincia de Buenos Aires. [104] 3: 243-244. **Crevecoeur, F. F.**—A versatile Kansas Naturalist, 1862-1931. Obituary by R. C. Smith. [Trans. Kansas Acad. Sci.] 34: 138-144, ill. **Dury, C.**—Obituary. By A. F. Braun. [43] 31: 512-514, ill. **Enderlein, G.**—Die insektenfauna Süd-Georgiens. [Sitz. Ges. Naturf. Freunde Berlin] 1930: 235-251. **Essig, E. O.**—A History of Entomology. 1029 pp., ill.

Hayward, K. J.—Cuatro insectos anormales. [104] 3: 245-246, ill. **Hine, J. S.**—Obituary. By C. H. Kennedy. [43] 31: 510-511, ill. **Imms, A. D.**—Social behaviour in insects. 117 pp., ill. **Mousley, H.**—Further notes on the birds, orchids, ferns and butterflies of the Province of Quebec, 1929-1930. [Can. Field Nat.] 46: 1-6. **Scott, J. D.**—A practical method of marking insects in quantitative samples taken at regular intervals. [So. Africa Jour. Sci.] 38: 372-375, ill. **Williams, S. H.**—Preliminary report on the animal ecology of Presque Isle, Lake Erie, Pennsylvania. [Pro. Penna. Acad. Sci.] 5: 88-97, ill.

ANATOMY, PHYSIOLOGY, ETC. — **Brown, F. M.** — The utilization of Hexose Carbohydrates by lepidopterous larvae. [An. N. Y. Acad. Sci.] 32: 221-234, ill. **Bryk, F.** — Die abhängigkeit der augenflecke vom flügelgeäder in der gattung Parnassius. [89] 62: 149-174, ill. **Friese, H.**—Wie können schmarotzerbienen aus sammelbienen entstehen? [89] 62: 1-14, ill. **Goldschmidt, R.** — Die entwicklungsphysiologische erklärung des falls der sogenannten treppenallelomorphe des gens scute von Drosophila. [97] 51: 507-526, ill. ***Hemming, A. F.** — On the types of certain genera of the family Pieridae. [9] 64: 272-273. **Krüger, E.** —Ueber die farbenvariationen der hummelart Bombus agrorum. [46] 24: 148-237, ill. **Leech, H.**—Drosophila funebris as a host of the fungus Stigmatomyces. [Pro. Ent. Soc. Brit. Columbia] 1931: 19-20. **MacGill, E. I.**—The biology of Thysanoptera with reference to the cotton plant. [35] 18: 574-583, ill. **Marcu, O.**—Zur kenntnis der geschlechtsunterschielde der stridulationsorgane bei Curculioniden. [Bull. Sect. Sci. Acad., Roumaine] 14: 124-131, ill. **Miller, F. W.**—Study of the reproductive system of the male and female (oviparous) cocklebur aphid. [Pro. Penna. Acad. Sci.] 5: 75-79, ill. **Mukerji, S.**—On the morphology of the terminal segments of Psychodidae larvae and their taxonomic importance. (With a short comparative account of the microscopic structure of the pseudo-leg of Phlebotomus argentipes.) [Indian Jour. Med. Res.] 19: 433-466, ill. **Paterson, N. F.**—A contribution to the embryological development of Euryope terminalis (Phytophaga, Chrysomelidae). [So. African Jour. Sci.] 38: 344-371, ill. **Perkins, M.** —Light of glow-worms. [31] 128: 905. **Schmuck & Metz.** —A method for the study of chromosomes in entire insect eggs. [68] 74: 600-601. **Speicher, B. R.**—The effects of

desiccation upon the growth and development of the Mediterranean flourmoth. [Pro. Penna. Acad. Sci.] 5: 79-82, ill. **Uvarov, E. B.**—The ash content of insects. [22] 22: 453-457. **Wigglesworth, V. B.**—The extent of air in the tracheoles of some terrestrial insects. [Pro. R. Soc., Lond.] 109, (B). 354-359, ill.

ARACHNIDA AND MYRIOPODA.— Handbuch der zoologie.—Kukenthal u. Krumbach. Bd. 3, heft 2. Lief. 1. Th. 3. 160 pp. Arachnida. **Pinkus, L. F.**—How a spider caught and dined upon a six-inch snake. [76] 1932: 80-83, ill.

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directly affect man, his domestic animals, his plants, his crops, his storehouse, and his home and health, with practical suggestions as to their control. Insects, on account of their numbers, being man's greatest enemies, comprise the bulk of the items; but other animal pests such as spiders, mites, ticks, parasitic worms, mammals and birds are included. The book is divided into two sections: Pests of man and domestic animals, and insect control and some important pests of the orchard, garden, field and household. Unfortunately no bibliography is given, but this was probably omitted in order to keep the book within reasonable bounds and price.

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OBITUARY.

Although late in publishing this record, the NEWS should not allow the passing of FREDERICK ARTHUR GODFREY MUIR to go unnoticed. He was born at Clapham, England, April 24, 1872, and died near Horsham, Sussex, May 13, 1931. Obituaries by W. E. China and J. J. Walker appeared in the July, 1931, numbers of *The Entomologist* and *The Entomologist's Monthly Magazine* respectively. Muir was in the employ of the Eastern Telegraph Company at various African stations from 1886 to 1905, but was always intensely interested in insects, encouraged by Dr. David Sharp, who induced him to turn to the career of a practical entomologist. From 1905 to 1927 he was one of the entomologists of the Hawaiian Sugar Planters' Association and, as such, the successful introducer of insect enemies of the cane-borer beetle, the sugar-cane leaf hopper and injurious lamellicorns. Dr. Howard also, in his recent book, *The Insect Menace,* has given an interesting account of Muir's labors, difficulties and final triumph in bringing the first of these parasites, the Tachinid, *Ceromasia sphenophori,* into Hawaii. Muir did excellent work on the anatomy of the male genital tube of Coleoptera, the head and mouth parts of Homoptera and, above all, on the structure and classification of the Fulgoroidea. He attended the International Congress of Entomology at Ithaca, in August, 1928, where many Americans had the pleasure of making his acquaintance.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

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